Miguel Costas Piñó

Curriculum Vitae, updated October 6, 2015

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Birth date: 11.28.1987

Education

2011–Present **[Currently] PhD. in Civil Engineering, area of Continuum Mechanics and Structural Theory**, *School of Civil Engineering*, University of A Coruña.
PhD. topic: *Computational modeling and structural optimization of multi-material impact absorbers.* Research stay at SIMLab (NTNU) during six months, granted by Fundación Barrié.

2005–2010 **MEng. in Civil Engineering (Ingeniero de Caminos, Canales y Puertos)**, *School of Civil Engineering*, University of A Coruña.
Number 11 of 95 in class. Erasmus exchange program at Syddansk Universitet (Odense, Denmark).

2005 **Professional degree in Music**, *Conservatory of Santiago de Compostela*.
Specialization in piano and music analysis.

Work history

2011–Present **RD Engineer**, *Structural Mechanics group, University of A Coruña*.
Simulation and optimization of crash-absorbing hybrid systems.
3D computational modeling of friction pendulums for the new 350-meter long bridge over the Chiche river, Ecuador.
Computational modeling of GFRP sheet-pile walls.

Summer of 2009 **Internship**, *Port Authority of Vilagarcía de Arousa (Puertos del Estado)*.
Support tasks at the infrastructures management board.

Teaching experience

Academic year 2013-2014 **Assistant in the practical training of the subject 'Bridges 1'**, *School of Civil Engineering, UDC*.
Support tasks.

Languages

Spanish	**Native**	
Galician	**Native**	
English	**Full professional proficiency, level C1**	*Certificate in Advanced English, Cambridge University. 2012.*
French	**Basic professional proficiency, level B1**	
Portuguese	**Basic professional proficiency**	
Norwegian	**Basic skills**	*Official A1 certificate (Bokmål)*

Computation skills

Structural analysis: Structural analysis with Abaqus Standard and Explicit. Deep knowledge in explicit crash simulations, including plasticity and failure models for metals and composites, contacts, joints, etc. Experience with Python scripts for pre and post-processing. Other software: Ansys, SAP2000, Cosmos/M.

Optimization packages: Experience in optimization of impact absorbers using an association of Abaqus with different optimization libraries such as DOT, SCOLIB, CONMIN, OPT++ and JEGA. Surrogate modeling using the Surfpack package. Experience with DAKOTA optimization framework.

CAD: Autocad

Programming languages: Python, Fortran, Bash

Other information

- Driving license. Car owner.
- Piano teacher and active professional concert pianist

Patents

- National Spanish patent no. ES 2-386-269-B1: Hybrid metal-composite system for crash energy absorption. Authors: Alberto Tielas, Isabel Álvarez, Raquel Ledo (Centro Tecnolóxico da Automoción de Galicia, CTAG); Miguel Costas, Luis Esteban Romera (University of A Coruña, UDC). Granted on the 11th of July 2013.

Publications

Research articles in JCR journals.

J Paz, J Díaz, L Romera, and M Costas. Size and shape optimization of aluminum tubes with GFRP honeycomb reinforcements for crashworthy aircraft structures. *Composite Structures*, 133:499–507, 2015.

M Cid Montoya, M Costas, J Díaz, LE Romera, and S Hernández. A multi-objective reliability-based optimization of the crashworthiness of a metallic-GFRP impact absorber using hybrid approximations. *Structural and Multidisciplinary Optimization*, pages 1–17, 2015.

J. Paz, J. Díaz, L. Romera, and M. Costas. Crushing analysis and multi-objective crashworthiness optimization of GFRP honeycomb-filled energy absorption devices. *Finite Elements in Analysis and Design*, 91:30 – 39, 2014.

M. Costas, J. Díaz, L. Romera, and S. Hernández. A multi-objective surrogate-based optimization of the crashworthiness of a hybrid impact absorber. *International Journal of Mechanical Sciences*, 88:46–54, 2014.

M. Costas, J. Díaz, L. E. Romera, S. Hernández, and A. Tielas. Static and dynamic axial crushing analysis of car frontal impact hybrid absorbers. *International Journal of Impact Engineering*, 62:166–181, 2013.

International conferences.

L. Romera, M. Costas, J. Díaz, J. Paz, and S. Hernández. Reduction of the frontal crash peak forces in a car using size optimization tools. In *35th FISITA World Automotive Congress, Maastrich (Netherlands)*, 2014.

J. Díaz, M. Costas, L. Romera, J. Paz, and S. Hernández. Surrogate-based multi-objective optimization of glass-fiber - steel crash absorbers. In *35th FISITA World Automotive Congress, Maastrich (Netherlands)*, 2014.

L. Romera, S. Hernández, M. Costas, A. Balomir, and P. Ouro. Assessment of seismic behaviour of portal bridges with double friction pendulum bearings. In *7th IABSE Symphosium, Madrid (Spain)*, 2014.

L. Romera, J. Paz, M. Costas, J. Díaz, and S. Hernández. Crashworthiness response of honeycomb metallic-GFRP energy abpsortion devices. In *HPSM/OPTI 2014, The 2014 International Conference on High Performance and Optimum Design of Structures and Materials*, 2014.

M. Costas, L. Romera, J. Díaz, S. Hernández, and A. Tielas. Computational and experimental analysis of a hybrid car impact absorber. In *Computational Methods and Experimental Measurements XVI, WIT Press, C.A. Brebbia, G. M. Carlomagno and S. Hernandez (eds.)*, pages 367–378, 2013.

M. Costas, J. Díaz, L. Romera, S. Hernández, and R. Ledo. Influence of welded joints on the crashworthiness response of hybrid structural elements. In *SAE 2013 World Congress and Exhibition, paper 13B-0036/2013-01-0755*, 2013.

Master Thesis in Structural Engineering (Syddansk Universitet, Denmark).

M. Costas, D. Gómez, G. Vilanova, and coordinators Dr. Carsten Munk Plum and M.Sc. Lys Rhilinger. *Load Bearing Capacity of Circular Hollow Sections Subjected to Combined Bending and Axial Compression*. Master's thesis, Tekniske Fakultet, Syddansk Universitet - Denmark, 2010.

Research stays

- Research stay from 1/10/2014 to 1/4/2015 (six months) at the Structural Impact Laboratory (NTNU, Norway) supervised by Prof. Magnus Langseth and Dr. David Morin.

Scientific advisory

- Reviewer in JCR journals *International Journal of Mechanical Sciences*, *Journal of Reinforced Plastics and Composites* and *Engineering Optimization*.